

 GOVERNMENT OF DUBAI	<b>Organization/Unit:</b> إدارة مختبر دبي المركزي Dubai Central Laboratory Department	الوحدة التنظيمية:	 بلدية دبي DUBAI MUNICIPALITY
	<b>Document Title:</b> Specific Rules for FA Certification of Reinforcing Steel Bars as per BS 4449: 1997 Amd 1	عنوان الوثيقة:	
	<b>Doc Ref.</b> DM-DCLD-RD-DP21-2147 (IC)	رقم الوثيقة :	

Issue Date	Rev. No.	Summary Of Amendments
07-01-2008	0	First draft for comments
08-01-2008	0	Final draft
13-01-2008	1	Issue for use
19-03-2008	2	Re issue to include Independent Testing Plan
06-04-2008	3	Insertion of Notations in clause 7.3.2.3 and clause 7.3.2.4
17-04-2008	4	Re issue to modify clause 8.1.2.2 independent testing plan; change the frequency of testing for chemical analysis from once a year to every three months
12-05-2008	5	Re issue to be consistent with the other specific rules for steel bars
20-05-2008	6	Re issue to modify clause 7.3.2.2; changes in table in clause 8.1.2.2; changes in clause 9.4.8
16-08-2009	7	Document reference number and format is changed according to the new IMS, statement for the independent testing plan was changed, and the statement for surveillance was shortened by referring the appropriate procedure, RD-DP21-2096 (IC).
05-05-2010	8	Re issue to modify clause 7.1.3; change the number of samples for testing from 15 to 10 pieces
23-09-2010	9	Re issue to incorporate the following: Amended as per new documentation structure; and Specifying clearly the Factory Production Control System (Internal Product Quality Assurance Plan)
11-03-2019	10	Updating the format as per new DM template and new DM logo

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## 1. GENERAL

### 1.1 INTRODUCTION

- 1.1.1 This document prescribes the specific rules for the implementation of the DM Third Party Product Certification System Through Factory Assessment as applied to the specific product(s) identified herein, taking into consideration the applicable normative references and standard specifications.
- 1.1.2 The applicant shall comply with these specific rules, and to those already mentioned in the "General Rules for DM Third Party Product Certification System Through Factory Assessment" DM-DCLD-RD-DP21- 2001 (IC).

### 1.2 SCOPE

- 1.2.1 This specific rule covers requirements for weldable steel bars for reinforcement of concrete. It covers plain round steel bars in grade 250, and deformed (type 1 and type 2) high yield steel bars in grade 460, the latter in two ductility categories, 460A and 460B.

### 1.3 PRODUCT IDENTIFICATION AND APPLICABLE STANDARD/NORMATIVE REFERENCE

- 1.3.1 Product Name: Carbon Steel bars for the reinforcement of concrete
- 1.3.2 Applicable standard/Normative reference: BS 4449:1997 with Amd 1– Carbon Steel bars for the reinforcement of concrete and the reference documents referred to in this standard.
- 1.3.3 Additional References:  
 ISO 9001 - Quality Management System – Requirements  
 ISO 19011 - Guidelines for Quality and Environmental Management System Auditing.

### 1.4 DEFINITION OF TERMS

In addition to the definitions given in BS 4449:1997 with Amd 1, DM-DCLD-RD-DP21-2001 (IC), the following shall also apply:

- 1.4.1 Independent Testing Laboratory - Dubai Central Laboratory (DCL) or any testing laboratory recognized by the DM Certification Body.
- 1.4.2 Independent Test – test performed or conducted by an Independent Testing Laboratory
- 1.4.3 Standard Specification – A BS 4449:1997 with Amd 1– Carbon Steel bars for the reinforcement of concrete
- 1.4.4 Factory Production Control System (Product Quality Assurance Plan) - a document being agreed upon both by the certified client and the certification body being used to ensure continuous compliance of the certified product.
- 1.4.5 QMS – Quality Management System aligned with the requirements of ISO 9001 Standard.

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## 2. REQUIREMENTS FOR CERTIFICATION

### 2.1 APPLICATION

2.1.1 Manufacturers of reinforcing steel bars and coils shall apply to Dubai Central Laboratory through Products Conformity Assessment Section for the license to use the DCL Conformity Mark.

2.1.2 Application forms shall be filled-up by the applicant-company and submitted to DCLD together with the following documents

- a. Trade License
- b. Complete product description and specifications
- c. Brief Description of Manufacturing Process
- d. Copy of the Quality Manual (Controlled Copy)
- e. Vicinity Map and Factory Layout
- f. Valid Certification to ISO 9001 (If available)
- g. List of personnel and their designation

### 2.2 FACTORY OPERATION

#### 2.2.1 Quality Management System

Manufacturer of reinforcing steel bars and coils shall have a Quality Management System that is aligned to the requirements of ISO 9001 standard. NOTE: Certification to ISO 9001 is not a mandatory requirement.

#### 2.2.2 Laboratory

Manufacturer of reinforcing steel bars and coils shall have a quality assurance laboratory to carry out factory production control testing to ensure that the reinforcing steel bars and coils comply with the requirements of the standard specification.

As a minimum requirement, the laboratory shall have the following testing equipment:

- a. Calipers and other linear measuring test equipments
- b. Weighing Scale (with an accuracy of 100 grams)
- c. Chemical Analyzer
- d. Tensile Test Equipment
- e. Bend Test Equipment

#### 2.2.3 Bar Marking Requirements

The manufacturer of reinforcing steel bars and coils shall submit to DCLD a unique bar marking requirements of their products for approval. The DCLD approved mark shall be applied to the products covered by the certification.

Product Marking shall be as per the General Rules on the Markings and Tags of Steel Bars, DM-DCLD-RD-DP21- 2091 (IC).

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## 2.3 INITIAL FACTORY AUDIT

- 2.3.1 DCL duly authorized representatives shall conduct an audit of the factory quality management system to verify its compliance with the requirements of ISO 9001.

NOTE: An independent certification to ISO 9001 issued by a QMS certification body recognized by DM may be considered as having satisfied this requirement; however, the DM Certification Body reserves the right to carry out verification audit to confirm that the factory is in compliance with the QMS requirements.

- 2.3.2 Verification audit shall be conducted by designated audit team based on ISO 19011 – Guidelines for Quality and Environment Management System Auditing.

## 2.4 PRODUCT EVALUATION

### 2.4.1 Sampling Testing

- 2.4.1.1 Three sets of samples per size within the size range shall be taken randomly. The first set shall be tested in the plant supervised by a duly authorized DCLD-PCAS representative, the second set will be sent to independent testing laboratory. The third set will be kept by the manufacturer as reference for future use.

- 2.4.1.2 Test sample(s) for independent test shall be identified and signed in the presence of DCL representative and shall be submitted to an independent testing laboratory.

- 2.4.1.3 Number of Samples for testing shall be at least 10 pieces by one meter length per size within the size range per grade.

### 2.4.2 Product Evaluation

- 2.4.2.1 The product shall conform to the requirements as specified in clauses 5, 6, 8, 9, 11, and 12 of the standard specification, BS 4449:1997 with Amd 1.

- 2.4.2.2 Tests to be carried out in accordance with BS 4449:1997 with Amd 1 requirements and shall have values as follows;

- 2.4.2.2.1 Cross sectional area and mass shall be as per Table 2  
 2.4.2.2.2 Nominal length shall not deviate by +100 mm and no negative tolerance or as agreed at the time of enquiry and order  
 2.4.2.2.3 Chemical composition shall be as per Table 4

*Note: ASTM E:415:2005 maybe used in determining the chemical analysis*

- 2.4.2.2.4 Carbon Equivalent shall be as per Table 5

*Note: ASTM E:415:2005 maybe used in determining the chemical analysis*

- 2.4.2.2.5 Mechanical Tests to include Tensile, elongation at break, Yield strength, Elongation at fracture shall be in accordance with Table 7

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- 2.4.2.2.6 Reband shall show no sign of fracture or irregular bending deformation when subjected to Annex E.1.6
- 2.4.2.2.7 Bond classification shall be as per clause 9 of the relevant standard. For steel bars that do not conform to the surface shape and bond classification in clause 9.2, it shall be determined by bond classification by performance in accordance in with clause 9.3. Bond test shall show a free end slip of not more than 0.2 mm when subjected to pull out test. Certificate of Bond Tests issued by an accredited laboratory whose scope of testing covers bond test can be accepted by the DCLD-PCAS, if available.
- 2.4.2.2.8 Fatigue strength shall comply with clause 12 of the standard specification. However, previously carried out Fatigue Tests by a laboratory that meets the requirements of RD-IC-0003 maybe accepted by the DCLD-PCAS, if available. It shall show that reinforcing bars, coils and decoiled products shall endure 5 x 10 to the 6<sup>th</sup> power cycles of stress.
- 2.4.2.3 Independent test shall only be conducted if the result of the in-plant test shows satisfactory result.
- 2.4.2.4 If the result of the test conducted by the independent testing laboratory shows non-conformance, the retest shall be carried out on the reference sample kept by the manufacturer or on new samples collected by DM Certification Body , on which full testing shall be carried out, if necessary.
- 2.4.2.5 If the retest passed, the initial product assessment is considered conforming to product specification. If not, the manufacturer will be advised to take corrective action.

### 3. GRANTING OF THE DCL CERTIFICATE OF CONFORMITY

#### 3.1 CONDITIONS FOR GRANTING THE DCL CERTIFICATE OF CONFORMITY

- 3.1.1 When the results of the factory audit (clause 2.3) and product evaluation (clause 2.4) show conformity to the requirements specified in the General Rule and Specific Rule, the license to use the DCL Conformity Mark shall be issued to the manufacturer for the type(s) and size range of the product tested.
- 3.1.2 The factory shall agree with the DM Certification Body for the preparation and implementation of a product quality assurance plan to ensure continuing compliance with the Standard Specifications and the requirements of this certification scheme. It shall consist of (1) an internal product quality assurance plan, and (2) an independent testing plan.
- 3.1.3 Factory Production Control System (Internal Product Quality Assurance Plan)

The factory shall prepare and submit to DM Certification Body for approval a factory production control system (internal product quality assurance plan).

The plan shall take into consideration the production process, the volume of production, the criticality of the test to be specified, frequency of sampling and testing, and other relevant factors.

Frequency of sampling and testing shall be in accordance with annex E of the standard specification.

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### 3.1.4 Independent Testing Plan

The factory shall agree to an independent testing plan to be carried out on samples which are collected in accordance with DM-DCLD-RD-DP21-2096 (IC) – Surveillance of Licensed Establishments under the Factory Assessment Scheme, and implemented by the DM Certification Body. The cost of testing under the independent testing plan shall be borne by the factory.

### 3.2 ISSUANCE OF DCL CERTIFICATE OF CONFORMITY

If the conditions mentioned in clause 3.1 above have been complied, the manufacturer of reinforcing steel bars and coils shall be issued a DCL Certification License and a Scope of Certification that covers the type(s) and size of the products that are certified.

### 3.3 RESPONSIBILITIES OF THE CERTIFIED CLIENT

- 3.3.1 Every certified client shall ensure that his product, for which a license has been issued, conforms at all times to the requirements of the General Rule and Specific Rules and shall maintain to the satisfaction of DCL, a system of quality control including inspection and testing.
- 3.3.2 The licensee shall give the duly authorized representative(s) of DCL, access during working hours, without prior notification, to the premises of the factory where certified product is manufactured, for the purpose of evaluating the materials, production processes, finished products, quality assurance facilities, records and others in accordance with the requirements of the scheme.
- 3.3.3 The certified client shall inform the DM Certification Body in writing of any change of management, transfer of plant site, modification in the product, manufacturing process or factory quality management system.
- 3.3.4 Upon transfer of plant site, the license shall be deemed valid only after factory and product audit at the new site has been satisfactorily completed.
- 3.3.5 Any infraction stated in the Terms and Conditions for the use of DCL Conformity Mark shall constitute sufficient grounds for suspension, withdrawal and cancellation of the license against a certified client.
- 3.3.6 Any dispute that may arise in connection with the Terms and Conditions of the DCL Mark shall be settled in accordance with DM-DCLD-IMS-RD-13 Appeals, Disputes, and Complaints Procedure.
- 3.3.7 The certified client shall pay all applicable fees related to the certification process.

## 4. SURVEILLANCE

- 4.1 DM Certification Body shall carry out periodic surveillance to ensure consistent compliance with the requirements of this certification scheme as per DM-DCLD-RD-DP21-2096 (IC) – Surveillance of Licensed Establishments under the Factory Assessment Scheme.
- 4.2 The surveillance shall be in accordance with the Independent Testing Plan (clause 3.1.4) that has been agreed between the DCLD and the factory.

## 5. FEE SCHEDULE

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- 5.1 The certified client shall pay the applicable fees and charges related to the granting of the license to use the DCL Conformity Mark based on the Fee structure for the control of reinforcing steel bars in the Emirate of Dubai, DM-DCLD-RD-DP21-2092 (IC).

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